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(54) **REARRANGING DATA BETWEEN VECTOR
 AND MATRIX FORMS IN A SIMD MATRIX
 PROCESSOR**

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(52) **U.S. Cl.** **712/10**

(58) **Field of Search** **712/10**

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(57) **ABSTRACT**

This invention discloses a group of instructions, block4 and block4v, in a matrix processor 16 that rearranges data between vector and matrix forms of an AxB matrix of data 120 where the data matrix includes one or more 4x4 sub-matrices of data 160-166. The instructions of this invention simultaneously swaps row or columns between the first 140, second 142, third 144, or fourth 146 matrix registers according to the instructions that perform pre-defined matrix tensor operations on the data matrix that includes one of the following group of operations: swapping rows between the different individual matrix registers, or swapping columns between the different individual matrix registers. Additionally, successive iterations or combinations of the block4 and or block4v instructions perform standard tensor matrix operations from the following group of matrix operations: transpose, shuffle, and deal.

13 Claims, 17 Drawing Sheets

